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ATSU interactive computing
The Newsletter of The Association of Time Sharing Users

PRESS REVIEW

The following articles are reprinted solely as items of interest for the independent evaluation by members of ATSU. The opinions, statements of fact, and conclusions expressed herein are not those of the Association.

AN EXCERPT FROM ....

All About Time-Sharing and Remote Computing Services

Surveying the Users

To evaluate the current level of user satisfaction with specific vendors of remote computing services and with remote computing techniques in general, Datapro Research Corporation, in conjunction with the Association of Time-Sharing Users, Inc. (ATSU), designed and conducted an extensive user survey. Reader survey forms on Remote Computing Services were mailed to our subscribers with the February 1976 supplement to DATAPRO 70, and were also included in ATSU's February Newsletter to its members and associates. (For more details on ATSU, please address all inquiries to the association's headquarters address: 210 Fifth Avenue, New York, NY 10010.)

Qualified responses were received from 475 users of remote computing services in the United States and Canada. Many users commented upon their experiences with two or more vendors and services. The average number of companies mentioned was 1.56, reflecting a slight downward trend in the use of multiple vendors' services relative to last year's reported average of 1.74.

It should be noted that the DATAPRO 70 subscribers and ATSU members who responded to our survey may not necessarily constitute a completely representative sample of "typical" remote computing users. Furthermore, the small sample sizes for some of the listed companies may make it unwise to draw firm conclusions about relative company performance from the indicated ratings. However, Datapro believes the survey results that follow can be of considerable value to users, prospective users, and vendors of the commercial remote computing services, provided the preceding caveats are kept in mind.

Responding users were asked to rate each remote computing service they had used or were using by assigning a rating of Excellent, Good, Fair, or Poor to overall satisfaction, cost effectiveness, quality and availability of technical support, quality of sales personnel, training effectiveness, ease of use, manuals and documentation, applications packages, languages and compilers, reliability, and response time.

The individual user ratings earned by the 25 remote computing companies that were rated by 5 or more users are summarized in the accompanying Users' Ratings tables.

A "Weighted Average of All Ratings" was calculated for each company by assigning a value of 4 to each user rating of Excellent, 3 to Good, 2 to Fair, and 1 to Poor. Among the 15 companies whose services were rated by 10 or more users, the highest average ratings were earned by:

Company	Overall Rating	No. of Users
Scientific Time Sharing Corp.	3.33	17
On-Line Systems	3.21	12
The Service Bureau Co.	3.07	80
Cyphernetics	3.05	31

Highly regarded companies with fewer than 10 user responses included:

Company	Overall Rating	No. of Users
Interactive Sciences Corp.	3.36	5
University Computing Co.	3.30	9
Standard Information Systems	3.25	6
First Data Corp.	3.18	6

The ratings assigned by all of the responding users can be combined to form the following overall picture of user satisfaction with the current remote computing services:

	Excellent	Good	Fair	Poor
Overall satisfaction	26%	56%	17%	3%
Cost-effectiveness	18%	41%	29%	11%
Technical support quality	31%	45%	20%	4%
Technical support availability	26%	41%	25%	7%
Sales personnel quality	26%	48%	19%	7%
Training effectiveness	14%	50%	27%	9%
Ease of use for experienced DP people	45%	46%	8%	1%
Ease of use for inexperienced or non-DP people	18%	46%	28%	8%

USERS' RATINGS OF REMOTE COMPUTING SERVICES (Continued)

Company*	No. of User Replies	Weighted Average of All Ratings**	Users' Ratings**																							
			Languages and Compilers				Application Packages				Manuals and Documentation				Availability of Technical Support				Quality of Technical Support				Quality of Sales Personnel			
			E	G	F	P	E	G	F	P	E	G	F	P	E	G	F	P	E	G	F	P	E	G	F	P
APL Series, Inc.	7	2.73	3	3	1	0	1	1	4	0	0	4	2	0	1	2	3	1	3	3	1	0	2	3	2	0
Boeing Computer Services, Inc.	19	2.75	9	5	3	1	4	7	5	1	2	12	5	0	5	9	4	1	5	9	5	0	3	12	4	0
Compu-Serv Network, Inc.	24	3.04	8	14	2	0	4	13	4	0	4	14	5	0	8	11	2	1	10	8	5	0	4	15	3	1
Computer Sciences Corp.	40	3.02	16	21	3	0	8	19	8	1	10	14	15	1	9	18	12	1	13	19	7	1	8	24	7	1
Comshare, Inc.	23	2.85	4	15	2	0	3	11	5	1	7	12	3	1	4	10	4	5	4	12	5	2	4	14	4	0
Control Data Corp.	21	2.92	7	11	1	0	6	9	2	1	3	14	4	0	2	6	12	1	3	13	5	0	4	14	1	2
Cyphernetics	31	3.05	5	19	5	0	8	14	8	0	14	12	5	0	12	11	8	0	11	13	7	0	9	22	0	0
Data Resources, Inc.	5	2.55	0	2	3	0	0	4	1	0	0	2	3	0	0	3	1	1	2	2	0	1	2	2	0	1
First Data	6	3.18	2	3	0	0	2	1	3	0	0	2	3	0	3	2	1	0	2	3	0	1	2	4	0	0
General Electric Co.	134	3.00	51	65	8	0	20	73	29	2	35	71	21	5	32	53	34	8	27	60	37	5	21	61	33	17
Honeywell Information Systems	7	3.13	4	2	1	0	2	2	3	0	1	3	2	1	4	2	0	0	4	2	0	0	2	2	0	1
Interactive Data Corp.	6	2.75	1	3	2	0	1	2	1	1	0	2	4	0	1	3	2	0	3	1	2	0	3	0	2	1
Interactive Sciences Corp.	5	3.36	3	2	0	0	1	3	0	0	0	4	1	0	2	3	0	0	4	1	0	0	0	5	0	0
McDonnell Douglas Automation Co.	13	2.88	7	3	2	0	4	5	2	1	5	3	4	1	2	5	3	3	2	7	3	1	5	2	4	2
National CSS, Inc.	36	2.92	14	16	1	3	12	15	6	1	11	17	7	0	8	13	13	2	12	18	5	1	7	21	4	4
On-Line Systems	12	3.21	7	3	2	0	6	4	2	0	4	4	3	1	4	5	3	0	6	4	2	0	5	4	2	1
Rapidata, Inc.	15	2.70	1	10	1	0	3	10	1	0	2	8	5	0	3	7	3	2	4	5	5	1	1	5	7	2
Remote Computing Corp.	5	2.83	2	1	0	0	0	2	2	0	0	1	1	2	0	2	1	1	2	1	1	0	2	0	2	0
Scientific Time Sharing Corp.	17	3.33	11	5	0	0	1	9	4	1	1	12	3	0	9	6	2	0	12	4	1	0	11	5	1	0
The Service Bureau Co.	80	3.07	17	45	11	3	19	37	17	2	27	38	9	6	22	36	16	5	24	38	14	4	29	30	15	6
Standard Information Systems	6	3.25	3	3	0	0	3	3	0	0	2	2	2	0	4	2	0	0	3	3	0	0	4	2	0	0
Time Sharing Resources, Inc.	5	3.16	3	1	1	0	0	3	1	0	1	3	1	0	4	0	1	0	5	0	0	0	0	4	0	1
Tymshare, Inc.	46	2.96	10	29	5	0	14	23	7	2	16	19	11	1	17	18	6	4	14	20	8	3	15	22	7	1
United Computing Systems, Inc.	23	3.01	8	10	4	0	6	10	5	0	4	14	3	2	8	8	5	2	10	8	4	1	4	12	5	1
University Computing Co.	9	3.30	3	2	1	0	5	4	0	0	4	4	0	0	2	6	0	0	5	3	0	0	4	2	1	1
All others	131	2.85	37	65	17	1	28	45	32	16	16	66	32	15	22	53	40	15	30	61	29	10	32	55	30	10

* Only the remote computing companies mentioned by five or more users are listed individually. The 57 companies rated by fewer than five users are combined in the "All others" entry.

**Users' ratings are expressed in terms of user responses; the legend is E for Excellent, G for Good, F for Fair, and P for Poor. The "Weighted Average of All Ratings" was calculated by assigning a value of 4 to each Excellent rating, 3 to Good, 2 to Fair, and 1 to Poor.

	Excellent	Good	Fair	Poor
Manuals and documentation	23%	50%	22%	5%
Application packages	23%	48%	22%	5%
Language and compilers	34%	53%	11%	1%
Reliability	36%	47%	13%	4%
Response time adequacy	35%	48%	13%	1%

As you can see, the users made it quite clear that they were generally well pleased with the current services in terms of overall satisfaction, ease of use (for experienced or DP-oriented people), languages and compilers, reliability, and response time. At the same time, the users' overall ratings show plenty of room for improvement in the areas of cost-effectiveness, technical support, training, documentation, application packages, and ease of use for inexperienced users.

Determining the most popular communications terminals from the survey proved to be rather cumbersome due to the proliferation of terminals being used and the frequent use of more than one commercial service. Consequently, avoid bias in the results, Datapro categorized the communications terminal population by function only, resulting in the following data:

Terminal Type	No. of Terminals	% of Total
Interactive	1137	88
Remote batch	159	12

Thus, the survey results clearly demonstrate that interactive terminals are still far more widely used than remote batch terminals for remote computing applications. The Teletype Model 33 continues to be the most popular terminal for remote computing use. However, other terminal manufacturers such as GE, Texas Instruments, and Univac are winning a significant market share.

The programming languages used by the survey respondents were as follows:

Language	No. of Users	% of Total
FORTRAN	354	75
BASIC	216	45
COBOL	98	21
APL	41	9

USERS' RATINGS OF REMOTE COMPUTING SERVICES

Company*	No. of User Replies	Weighted Average of All Ratings**	Users' Ratings**																									
			Overall Satisfaction				Cost Effectiveness				Response Time Adequacy				Reliability				Ease of Use (Inexperienced Users)				Ease of Use (Experienced Users)				Effectiveness of Training Aids			
			E	G	F	P	E	G	F	P	E	G	F	P	E	G	F	P	E	G	F	P	E	G	F	P	E	G	F	P
APL Services, Inc.	7	2.73	1	2	4	0	1	4	2	0	2	4	1	0	1	2	2	1	0	3	2	0	0	5	1	0	0	2	2	1
Boeing Computer Services, Inc.	19	2.75	3	12	3	1	0	6	10	3	5	11	3	0	4	9	4	2	1	5	11	1	5	11	1	2	1	8	4	3
Compu-Serv Network, Inc.	24	3.04	5	14	5	0	5	11	5	2	7	15	2	0	9	13	2	0	5	12	5	2	12	8	2	1	0	9	10	1
Computer Sciences Corp.	40	3.02	13	22	4	1	7	24	8	1	13	18	7	2	12	19	8	1	9	15	10	4	22	13	3	0	2	24	8	2
Comshare, Inc.	23	2.85	2	16	5	0	2	8	11	1	4	16	3	0	6	13	3	1	1	10	7	4	7	12	2	0	2	10	5	2
Control Data Corp.	21	2.92	3	13	4	0	5	10	3	3	5	12	4	0	5	11	3	0	3	3	8	4	7	11	2	0	2	9	4	1
Cyphernetics	31	3.05	6	19	6	0	2	9	13	7	11	16	3	0	15	15	0	0	3	17	10	1	12	12	4	0	5	15	7	2
Data Resources, Inc.	5	2.60	0	4	1	0	0	1	4	0	0	1	4	0	0	2	2	1	0	3	2	0	1	3	1	0	0	3	0	0
First Data Corp.	6	3.18	3	3	0	0	4	2	1	0	2	4	0	0	2	4	0	0	1	2	2	0	4	1	0	0	0	0	5	0
General Electric Co.	134	3.00	28	78	21	6	13	66	44	8	55	63	11	2	58	57	13	2	22	80	22	5	64	54	8	1	19	71	26	4
Honeywell Information Systems	7	3.13	3	3	1	0	2	4	0	0	4	2	1	0	2	4	1	0	1	3	1	2	4	2	1	0	0	3	1	0
Interactive Data Corp.	6	2.75	0	4	2	0	1	2	3	0	3	2	0	1	2	3	1	0	0	1	3	2	2	3	1	0	1	2	2	1
Interactive Sciences Corp.	5	3.36	3	2	0	0	3	2	0	0	4	1	0	0	3	2	0	0	1	2	2	0	3	2	0	0	0	4	1	0
McDonnell Douglas Automation Co.	13	2.88	3	10	3	0	2	5	4	2	3	6	3	1	6	5	2	0	1	5	6	1	7	6	0	0	1	4	4	2
National CSS, Inc.	36	2.92	10	15	10	1	8	8	15	5	10	15	8	3	9	14	8	4	7	9	13	5	5	17	0	0	4	17	8	2
On-Line Systems	12	3.21	8	1	2	1	3	5	3	1	9	2	1	0	9	3	0	0	1	8	3	0	9	2	1	0	2	5	2	3
Rapidata, Inc.	15	2.70	1	7	6	1	1	6	5	3	3	8	1	2	2	10	1	1	1	8	3	1	1	9	4	0	1	4	5	2
Remote Computing Corp.	5	2.83	1	1	2	0	1	0	2	1	1	2	1	0	2	1	1	0	2	0	1	0	2	2	0	0	0	0	3	0
Scientific Time Sharing Corp.	17	3.33	7	8	1	0	7	6	3	0	11	6	0	0	10	7	0	0	4	6	4	2	8	7	1	0	5	10	0	0
The Service Bureau Co.	80	3.07	16	49	13	1	7	41	25	6	37	38	4	1	36	35	7	2	19	44	15	2	36	34	3	0	22	47	9	2
Standard Information Systems	6	3.25	3	3	0	0	2	3	1	0	0	3	1	1	2	2	2	0	2	2	2	0	3	3	0	0	2	3	1	0
Time Sharing Resources, Inc.	5	3.16	1	4	0	0	1	1	2	2	2	3	0	0	0	5	0	0	1	4	0	0	2	3	0	0	0	3	0	1
Tymshare, Inc.	46	2.96	8	30	6	2	5	18	14	9	8	23	11	4	18	17	7	4	13	13	16	4	18	23	3	2	7	15	16	2
United Computing Systems, Inc.	23	3.01	5	15	3	0	10	7	6	0	5	15	2	1	6	14	3	0	4	13	2	2	9	13	1	0	1	7	8	3
University Computing Co.	9	3.30	5	3	1	0	2	5	1	0	3	5	0	0	3	4	1	0	3	4	0	1	2	4	1	0	2	4	1	0
All others	131	2.85	31	66	23	11	40	45	31	14	48	57	16	11	36	65	22	8	20	48	43	13	55	56	15	2	11	40	38	23

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Language	No. of Users	% of Total
Assembler	17	4
PL/1	15	3
MACRO	5	1
RPG	1	–

Thus, FORTRAN remains the clear leader in popularity, with BASIC and COBOL also boasting widespread acceptance among remote computing users. The survey respondents were using an average of 2.16 different programming languages each.

The remote computing applications reported by the survey respondents spanned virtually the entire spectrum of business and scientific applications. The leading applications cited included the following:

Application	No. of Users	% of Total
Accounts payable	48	10
Accounts receivable	48	10
Banking	16	3
Billing	8	2
Communications	4	1
Data base management	60	13
Educational	11	2
Engineering	78	16
Financial	167	35
General ledger	21	4
Hospital administration	3	1
Information retreival	16	3
Insurance	17	4
Inventory control	34	7
Modeling	68	14
Numerical control	2	–

Application	No. of Terminals	% of Total
Operation research	3	1
Payroll	21	4
Personnel	10	2
Production	20	4
Project control	7	1
Sales analysis	4	1
Scheduling	7	1
Scientific	27	6
Simulation	28	6
Statistical	83	17
Text editing	6	1

In addition to the information previously requested, this year's survey was expanded to cover other questions of possible interest to the industry. This data covers areas such as amounts spent monthly, changes in 1975-1976 usage, length of use, user categories, and proportional use of time-sharing/remote batch services. The results are summarized in the following tables.

Average Monthly Bill for Remote Computing Services	No. of Responses	% of Total
Below $500	199	28
$500 to $2,000	239	34
$2,000 to $5,000	123	17
Over $5,000	148	21

Changes in Use of Services During 1975	No. of Responses	% of Total
Increased	430	58
No change	161	22
Decreased	116	16
Stopped	27	4

Expected Changes in Use of Services during 1976	No. of Responses	% of Total
Increase likely	236	37
No change likely	218	34
Decrease likely	135	21
Will likely stop	49	8

Type of Service Usage	No. of Responses	% of Total
100% conversational time-sharing	371	51
Over 50% conversational time-sharing	221	31
Over 50% remote batch	96	13
100% remote batch	37	5

Length of Use	No. of Responses	% of Total
Under 6 months	61	8
Under 2 years	215	30
2 to 5 years	288	39
Over 5 years	164	23

Extent of Communications Network Required	No. of Responses	% of Total
Local only	416	58
500-mile radius	66	9
Nationwide	177	24
International	68	9

Categories of users	No. of Users	% of Total
Management	1,435	15
Programmers	2,478	25
Other data processing personnel	2,117	22
All others	3,725	38

The entire report is available from ATSU (for members only) as part of the following package for $15:

The Book:

- "A Manager's Guide to Computer Time-Sharing"
  Published by Wiley, 1975 (regular price $9.95), and

The Three Datapro Reports:

- "All About Time-Sharing and Remote Computing Services"
- "All About Alphanumeric Display Terminals"
- "All About Teleprinter Terminals"
  (Regular Price $10.00 each)

Payment must accompany all orders.

THE CASE AGAINST CORPORATE PLANNING MODELS*

Robert J. Allio, Canada Wire and Cable Limited

Management interest in the use of models for business planning and forecasting has flourished in recent years. Much of this interest was stimulated by the easy access which time-sharing has provided to the computer and its ability to process large amounts of data quickly. However, the development of a variety of simple programming languages and computational subroutines also has facilitated experiments with planning models.

*The result has been a surge in model building. Seventy-three percent of those corporations queried in a recent survey** were actively developing or applying computer models of their firms. Management scientists and econometricians also have constructed models of more complex phenomena, such as the national economy.*

Corporate management, unfortunately, has often been disappointed and disillusioned by the performance of computer models. Models have not increased our ability to contend with increasing uncertainty and some apparently irreversible trends. We desperately seek better decision-making tools. Why have models failed to meet our expectations?

The failures of modeling do not derive from any single source. We must look instead to a variety of factors, including the following:

(1) <u>The data base is flawed</u>
The data base for a model often contains inadequate, inaccurate, or irrelevant historical information. As a result, the past may be as obscure as the future. Output from a model having such a data base will be unreliable and misleading. More input data may not improve either the quality or reliability of the output.

Some corporations have been beguiled into the belief that <u>reliability</u> of descriptions, forecasts, or output in general increases the size of the data base or the number of equations in the model increases. In reality, of course, it is often only the <u>confidence</u> of the modeler which increases as model size or complexity increases. Simple models may be more reliable than complex models.

(2) <u>Causal relationships have not been established</u>
Models of business units are predicated upon either causality or strong correlations among the variables. The impact of changes in behavior by one function of the organization (e.g., marketing, manufacturing, engineering) upon financial performance often is hard to

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* *Originally presented at NABE's The Use and Abuse of Econometric Models for Economic Forecasting and Business Planning Conference, Port Chester, New York, December, 1975.*

** *Thomas H. Naylor, The Future of Corporate Planning Models, Social Systems, Inc., 1975.*

define. The task of defining these impacts is even more difficult during a period of rapid change. Simple static systems may be easy to model--but, the results have little interest to management. Ironically, it is the interesting systems (complex and dynamic) which are hard to model.

Our knowledge of how to build complex models has greatly surpassed our understanding of how a complex organization works. Skill in programming a computer is a poor substitute for understanding the behavior of the corporation.

(3) *System behavior is ignored*

Most models tend to treat business units as closed systems or make simple assumptions about the key exogenous variables. The contemporary corporation, however, is part of an open system. Actions by any of a multitude of stakeholders, including consumers, environmentalists, legislators, labor, and suppliers, can have a profound effect on the organization. Few attempts have been made to couple the behavior of the firm to the behavior of the total system. Even the efforts to predict industry sector performance based on macromodels of the economy have been notoriously unsuccessful.

Simulating the effect of business tactics or strategy is no easier. How will a change in price influence market demand for a product? How will competition respond to this price change? Predictions based on the classic laws of the free economy have less and less validity as the environment becomes more regulated and monopolistic or oligopolistic. Political decisions on fiscal and monetary policy have been responsible for much of the variance in recent economic forecasts--have any models incorporated political variables into their structure?

(4) *Last year's model is obsolete*

Despite Santayana's position on this issue, we are condemned to repeat the past only if we believe the future to be an extension of the past. Models based on this premise tend to give unreliable output. Paradoxically, however, historical simulation is the standard method for validation of models.

Surprise free scenarios have little value, because the future is no longer an extension of the past. We live in an era of rapid change. Many of these changes are caused by discontinuities and by definition are either unpredicted or unpredictable. Models must introduce new assumptions about the future--those models which ignore the future have not often been helpful to management.

(5) *Model response to change is too slow*

Models must be adaptable to changes in the environment. Rates of change, however, are often too rapid for models to accommodate--the reaction time of the model is too

slow. Even in a stable situation, the time required to collect data, process data, and provide output to the decision-maker is often incompatible with the needs of the decision-making process.

The apparently high inertia of many models often is created by the model builder who falls prey to the Penelope web syndrome. Penelope, apparently abandoned by Ulysses, staved off her many suitors by promising to marry as soon as she completed weaving a tapestry. To the dismay of her suitors, the tapestry made little progress towards completion. Although she wove diligently during the day, Penelope would arise each night and undo a portion of her day's work. The corporate model is always being refined by the model builder, and seems to approach completion no more quickly than Penelope's tapestry. To be sure, it is the client for the model who is the ultimate victim of this syndrome.

The failures of models have contributed to a rapid deterioration in their credibility and the credibility of model builders. The isolation of model builders in many firms has not helped. Modelers talk mostly to other members of their own cult. All too often they fail to communicate effectively with their ultimate customer, the management of the firm. As a result, they may not understand the decision-making process of the organization. Strategic management decisions, as one example, are rarely made on the basis of quantitative data alone (although these data may be an important input to the decisions). These are some of the specific traps practitioners fall into:

- *Promote or endorse multiple data bases (e.g., the financial data base vs. the planning data base).*
- *Insist that packaged programs are never as good as the unique program that can be designed for the organization's allegedly unique needs.*
- *Build "complete" but high-inertia inflexible models.*

Even if the model be defect-free, top management is often uncomfortable with the process of modeling. As a consequence, they may be reluctant to accept the output from the model. The final criterion for the quality of any model must be its acceptability to the user.

We cannot, however, hold the model builder entirely responsible for the recalcitrance of management. Most top executives have had limited exposure to management science. This has created a cultural gap between management and the model builder. All managers, moreover, rely heavily upon their intuition. This reliance creates an interesting paradox. Managers will believe the output from a simple model because it comports with their intuition--but, the output will be dismissed because it is usually trivial. Output from a complex

model on the other hand is often counterintuitive. As a result, although a manager's intuition may well be faulty, he or she tends to reject such output (even though it may be correct).

Effectively designed and utilized models have high potential utility. What can be done to improve their value and acceptance? Here are some prescriptions:

- *Give special attention to the accuracy and relevance of the data base; make sure that valid indicators are selected*. Examine carefully the assumptions of the model to assure that they will apply during the time period of interest.*

- *Make the response time of the model fast enough to meet the needs of the decision-makers and fast enough to sense any important external change. Consider the use of a system to provide early warning economic, technological, social, or political discontinuities and turning points.*

- *Do not present the model as a tool for making accurate predictions. Do use the model to prepare alternative scenarios, i.e., to illustrate the future consequences of present decisions.*

- *Improve communications with management. Emphasize the benefits of the modeling process, e.g., in displaying information. Start with simple, short turn-around models which work (i.e., get management's confidence!). Models of well-structured decomposable problems provide the best entree to the later use of strategic models.*

Modeling has been abused and oversold. Despite their limitations, however, models have enormous potential to improve the decision-making process. Thus, while it is risky to rely blindly on models, not to utilize their power is equally risky.

**Failures to properly forecast the 1974-75 decline in the U.S. economy were the result of using incorrect economic indicators.*

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